

IN THE CLAIMS

Claims 1-26 (canceled)

Claim 27 (new): A method for making a semiconductor device comprising:

forming a high-k gate dielectric layer on a substrate, the high-k gate dielectric layer comprising impurities and oxygen;

exposing the high-k gate dielectric layer to a solution that comprises hydrogen peroxide at a sufficient temperature for a sufficient time to remove impurities from the high-k gate dielectric layer and to increase the oxygen content of the high-k gate dielectric layer;

applying sonic energy while the high-k gate dielectric layer is exposed to the solution that comprises hydrogen peroxide; and then

forming a gate electrode on the high-k gate dielectric layer.

Claim 28 (new): The method of claim 27 wherein sonic energy is applied at a frequency of between about 10KHz and about 2,000 KHz, while dissipating at between about 1 and about 10 watts/cm².

Claim 29 (new): The method of claim 28 wherein sonic energy is applied at a frequency of about 1,000 KHz, while dissipating at about 5 watts/cm².

Claim 30 (new): The method of claim 27 wherein the solution that comprises hydrogen peroxide is an aqueous solution that contains between about 2% and about 30% hydrogen peroxide by volume, and wherein the high-k gate dielectric layer is exposed to the aqueous solution at a temperature that is between about 15°C and about 40°C for at least about one minute.

Claim 31 (new): The method of claim 30 wherein the aqueous solution contains about 6.7% hydrogen peroxide by volume, and wherein the high-k gate dielectric layer is exposed to the aqueous solution for about 10 minutes at a temperature of about 25°C.